

0492-2504-Q/Final (1)/TCS

## What is claimed is:

- 1 1. An apparatus for removing impurities from effluent waste  
2 gas streams, comprising:
  - 3 (a) a treatment chamber having an inlet for introducing  
4 the effluent waste gas streams and an outlet;
  - 5 (b) a spraying device for spraying liquid disposed in  
6 said treatment chamber to form a plurality of liquid  
7 films, each of which are formed vertically and  
8 spaced from each other; and
  - 9 (c) a blower for sucking the waste gas stream upwardly  
10 through the plurality of spaced liquid films in  
11 which a portion of the impurities in the waste gas  
12 streams is mixed with the liquid to form a liquid  
13 mixture and simultaneously the waste gas stream is  
14 humidified, wherein the liquid mixture flows  
15 downward and the humidified waste gas is sucked out  
16 from the outlet of said treatment chamber.
- 1 2. The apparatus as claimed in claim 1, further comprising a  
2 tank disposed under said treatment chamber for receiving  
3 the liquid mixture.
- 1 3. The apparatus as claimed in claim 1, wherein said  
2 spraying device includes a pipe disposed in the center of  
3 said treatment chamber having a nozzle from which the  
4 liquid is sprayed out, and a plate member disposed on the  
5 opposite side of said nozzle in a manner that the  
6 sprayed-out liquid impinges on said plate member to form,  
7 the liquid film.

1 The apparatus as claimed in claim 3, further comprising a  
2 device for controlling the level of the liquid mixture, the  
3 flow rate of the effluent waste gas streams passing through  
4 said treatment chamber, and the flow rate of the liquid  
5 coming out from nozzles of said spraying means.

1 4. An apparatus for removing impurities from effluent waste  
2 gas streams, comprising:

3 (a) a treatment chamber having an inlet for introducing  
4 the effluent waste gas streams and an outlet;

5 (b) a spraying device for spraying liquid disposed in  
6 said treatment chamber to form a plurality of liquid  
7 films, each of which are formed vertically and  
8 spaced from each other;

9 (c) a blower for sucking the waste gas stream upwardly  
10 through the plurality of spaced liquid films in  
11 which a portion of the impurities in the waste gas  
12 streams is mixed with the liquid to form a liquid  
13 mixture and simultaneously the waste gas stream is  
14 humidified, wherein the liquid mixture flows  
15 downward and the humidified waste gas is sucked out  
16 from the outlet of said treatment chamber; and

17 (d) a dehumidifying device for dehumidifying the  
18 humidified waste gas streams sucked from the outlet,  
19 disposed above said treatment chamber.

1 5. The apparatus as claimed in claim 5, wherein said  
2 dehumidifying device comprises a chamber having a  
3 plurality of perforated buffer plates disposed along the,  
4 longitudinal axis thereof, each of which is disposed  
5 therein and spaced apart; and a plurality of filtering

6 members disposed along the longitudinal axis thereof,  
7 each of which is disposed therein and spaced apart.

1 6. The apparatus as claimed in claim 6, wherein said  
2 filtering members is disposed downstream of the  
3 perforated buffer plates.

1 7. The apparatus as claimed in claim 5, further comprising a  
2 tank disposed under said treatment chamber for receiving  
3 the liquid mixture.

1 8. The apparatus as claimed in claim 5, wherein said  
2 spraying device includes a pipe disposed in the center of  
3 said treatment chamber having a nozzle from which the  
4 liquid is sprayed out, and a plate member disposed on the  
5 opposite side of said nozzle in a manner that the  
6 sprayed-out liquid impinges on said plate member to form  
7 the liquid film.

1 9. The apparatus as claimed in claim 5, further comprising a  
2 device for controlling the level of the liquid mixture,  
3 the flow rate of the effluent waste gas streams passing  
4 through said treatment chamber, and the flow rate of the  
5 liquid coming out from nozzles of said spraying means.

1 10. The apparatus as claimed in claim 5, wherein said liquid  
2 is water.

1 11. The device as claimed in claim 5, wherein the waste gas  
2 streams are from semiconductor etch and deposition  
3 processes.